

WHAT IS CLAIMED IS

1. A hands-free kit for a mobile phone having a hands-free connection port, comprising a speaker, a microphone, a connector for connection with a said port, an electrical cable connecting the speaker and the microphone to the connector, and a tube having a first end connectable with the speaker and a second end comprising an earplug, said tube being adapted to act as an acoustic passage to transmit sound reproduced by the speaker to the earplug.

2. The hands-free kit as claimed in claim 1, wherein the tube is flexible.

3. The hands-free kit as claimed in claim 1, wherein the tube is made of non-metallic material.

4. The hands-free kit as claimed in claim 1, wherein the tube is made of rubber material.

5. The hands-free kit as claimed in claim 1, wherein the tube is made of plastic material.

6. The hands-free kit as claimed in claim 1, wherein the speaker has a body, and the first end of the tube receives to enclose and thus connect with the speaker body.

1 7. The hands-free kit as claimed in claim 6, wherein the tube
2 is enlarged at its first end to connect with the speaker body,
3 and includes a section immediately adjacent the enlarged end
4 that is tapered to concentrate sound emitted by the speaker
5 into the tube.

6
7 8. An acoustic passage for use with a mobile phone hands-free
8 earphone comprising a speaker and a microphone, which passage
9 comprises a tube having a first end comprising means for
10 connecting with a said speaker and a second end comprising an
11 earplug, said tube being adapted to transmit sound reproduced
12 by the speaker to the earplug.

13
14 9. The acoustic passage as claimed in claim 8, wherein the
15 tube is flexible.

16
17 10. The acoustic passage as claimed in claim 8, wherein the
18 tube is made of non-metallic material.

19
20 11. The acoustic passage as claimed in claim 8, wherein the
21 tube is made of rubber material.

22
23 12. The acoustic passage as claimed in claim 8, wherein the
24 tube is made of plastic material.

25
26 13. The acoustic passage as claimed in claim 8, wherein the
27 first end of the tube is adapted to receive and thus connect
28 with a said speaker.

2025-10-28 10:45:02

1
2 14. The acoustic passage as claimed in claim 13, wherein the
3 first end of the tube is enlarged for connecting with a said
4 speaker, and the tube includes a section immediately adjacent
5 the enlarged end that is tapered to concentrate sound emitted
6 by a said speaker into the tube.

7
8 15. The acoustic passage as claimed in claim 8, wherein said
9 means comprises an enclosure which provides a cavity adapted to
10 house and locate wholly therein a said speaker and includes an
11 opening to which the first end of the tube is connected for
12 communicating with the cavity.

13
14 16. The acoustic passage as claimed in claim 15, wherein the
15 cavity has an entire inner surface and is provided with a metal
16 shield that covers a substantial part of the entire inner
17 surface to surround a said speaker.

18
19 17. The acoustic passage as claimed in claim 16, wherein the
20 shield is formed by two substantially identical shells closing
21 with each other.

22
23 18. The acoustic passage as claimed in claim 16, wherein the
24 shield has a shape matching with that of the inner surface of
25 the cavity and is in ultimate surface contact therewith.

26
27 19. The acoustic passage as claimed in claim 15, wherein the
28 enclosure provides a first cavity that is the first mentioned

10046336 041502

1 cavity and also a second cavity that provides a sound passage
2 which has a first end connected to the first cavity for
3 communicating therewith and a second end that acts as the
4 opening to which the first end of the tube is connected.

5

6 20. The acoustic passage as claimed in claim 19, wherein the
7 sound passage extends in a substantially spiral manner having
8 an outer end as the said first end and an inner end as the said
9 second end.

10

11 21. The acoustic passage as claimed in claim 20, wherein the
12 sound passage has at least half a turn and up to two turns.

13

14 22. The acoustic passage as claimed in claim 15, wherein the
15 enclosure provides another cavity adapted to house and locate
16 wholly therein a said microphone.

17

18 23. The acoustic passage as claimed in claim 22, wherein said
19 another cavity has an entire inner surface and is provided with
20 a metal shield that covers substantially the entire inner
21 surface to surround a said microphone.

22

23 24. The acoustic passage as claimed in claim 23, wherein the
24 shield is formed by two substantially identical shells closing
25 with each other.

26

10045333 01502

1 25. The acoustic passage as claimed in claim 23, wherein the
2 shield has a shape matching with that of the inner surface of
3 the cavity and is in ultimate surface contact therewith.

4
5 26. The acoustic passage as claimed in claim 15, wherein the
6 enclosure is to be formed by two connected parts having
7 respective walls abutting each other, which walls are shaped
8 and combine to form at their interface the cavity or cavities.

9
10 27. The acoustic passage as claimed in claim 26, wherein the
11 or each cavity is formed by two substantially identical parts,
12 one from the wall of each part of the enclosure.

13
14 28. The acoustic passage as claimed in claim 15, wherein the
15 enclosure has an open outer side and a hollow interior
16 accessible through the open side for storing at least part of
17 the tube and the earplug.

18
19 29. The acoustic passage as claimed in claim 15, wherein the
20 enclosure is provided with a fastener for fastening the overall
21 acoustic passage onto the body of a user.

22
23 30. The acoustic passage as claimed in claim 15, wherein the
24 earplug comprises a tubular plug for insertion into the hole of
25 a user's ear and an integral outer member extending around the
26 plug for holding onto the inner surface of a said user's ear by
27 friction.

28

10046838-014502

1 31. The acoustic passage as claimed in claim 15, in
2 combination with a mobile phone hands-free earphone comprising
3 a speaker and a microphone, wherein the speaker is housed
4 within the or the first cavity.

5

6 32. The acoustic passage as claimed in claim 22, in
7 combination with a mobile phone hands-free earphone comprising
8 a speaker and a microphone, wherein the speaker is housed
9 within the or the first cavity and the microphone is housed

2025-08-28 10:45:00